

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in this application.

1. (currently amended) A flexible rod for use in a spinal fixation device and for mounting between a first pedicle screw and a second pedicle screw such that the flexible rod limits movement of a first vertebra relative to a second vertebra, the flexible rod comprising

a first end ~~received by and coupled to the first pedicle screw;~~

a second end ~~received by and coupled to the second pedicle screw, the first and second pedicle screws capable of securing the rod between a first vertebra and a second vertebra such that the flexible rod limits movement of the first vertebra relative to the second vertebra;~~ and

a longitudinal substantially cylindrical center section having a longitudinal axis and an outer surface, the center section being located between and coupled to the first end and the second end, the center section including a plurality of grooves formed in the outer surface of the substantially cylindrical center section, the plurality of grooves extending circumferentially around the longitudinal axis and a plurality of holes formed in the substantially cylindrical center section, each hole intersecting an end of at least two of the plurality of grooves formed in the outer surface of the rod.
2. (previously presented) The flexible rod of claim 1, wherein the rod is made from a material selected from the group consisting of: stainless steel, iron steel, titanium, titanium alloy and NITINOL.

3. (canceled)

4. (previously presented) The flexible rod of claim 1, wherein the grooves are cut toward a center longitudinal axis of the rod and each one of the plurality of grooves is associated with a first hole at a first end and a second hole at a second end.

5. (previously presented) The flexible rod of claim 1, wherein the rod is solid along a longitudinal section.

6. (previously presented) The flexible rod of claim 5, further including a plurality of transverse tunnels formed within at least a portion of the solid longitudinal section and wherein each tunnel coincided with at least one hole.

7. (previously presented) The flexible rod of claim 6, wherein the rod is solid and the first end, the second end, and the center section are monolith and each transverse tunnel passes through a center longitudinal axis of the cylindrical portion of the rod such that openings for each respective transverse tunnel are located on opposite sides of the rod and coincides with at least one of the holes.

8. previously presented) The flexible rod of claim 1, wherein the first end, the second end, and the center section are a monolith.

9. (canceled)

10. (previously presented) The flexible rod of claim 6, wherein each of said plurality of transverse tunnels have an internal diameter between 0.2 and 3 millimeters.

11.-14. (canceled)

15. (previously presented) A connection unit for use in bony fixation, comprising:

a first bone coupling assembly; and

a longitudinal solid metal rod having an outer surface, including:

a first end received by and coupled to the first bone coupling assembly;

a second end; and

a substantially cylindrical center section located between and coupled to the first end and the second end, the center section including a plurality of grooves formed in the outer surface of the rod, and a plurality of tunnels formed in the center section of the rod, each tunnel including a pair of diametrically opposed openings on the outer surface of the rod, wherein the tunnel openings intersect one of the grooves formed in the outer surface of the rod.

16. (previously presented) The connection unit of claim 15, wherein the rod is made from a material selected from the group consisting of: stainless steel, iron steel, titanium, titanium alloy and NITINOL.

17. (canceled)

18. (previously presented) The connection unit of claim 15, wherein the grooves are cut toward a center longitudinal axis of the rod.

19. (canceled)

20. (canceled)

21. (canceled)

22. (previously presented) The connection unit of claim 15, wherein the first end, the second end, and the center section are a monolith.

23. (previously presented) The connection unit of claim 21, wherein each of said plurality of transverse tunnels have an internal diameter between 0.2 and 3 millimeters.

24. (previously presented) A longitudinal metal rod for use in bony fixation and having an outer surface, the rod comprising:

a first end;

a second end; and

a substantially cylindrical center section located between and coupled to the first end and the second end, the center section including a plurality of grooves formed in the outer surface, and a plurality of tunnels formed in the center section, each tunnel including a pair of diametrically opposed openings on the outer surface, wherein the tunnel openings intersect one of the grooves formed in the outer surface.

25. (previously presented) The longitudinal metal rod of claim 24, wherein the rod is made from a material selected from the group consisting of: stainless steel, iron steel, titanium, titanium alloy and NITINOL.

26. (canceled)

27. (previously presented) The longitudinal metal rod of claim 24, wherein the grooves are cut toward a center longitudinal axis of the rod.

28. (canceled)

29. (canceled)

30. (canceled)

31. (previously presented) The longitudinal metal rod of claim 24, wherein the first end, the second end, and the center section are a monolith.

32. (previously presented) The longitudinal metal rod of claim 30, wherein each of said plurality of transverse tunnels have an internal diameter between 0.2 and 3 millimeters.

33. (previously presented) The longitudinal metal rod of claim 24, wherein the tunnels pass through a center longitudinal axis of the cylindrical portion of the rod.

34. (previously presented) The longitudinal metal rod of claim 24, wherein adjacent tunnels share a common opening on one side of the outer surface of the rod thus forming a zig-zag pattern of tunnels passing transversely through a central longitudinal axis of the rod.

35. (previously presented) The longitudinal metal rod of claim 24, wherein the tunnel has a diameter and the grooves have a width, the diameter of the tunnel is at least twice as wide as the width of the grooves.

36. (previously presented) The longitudinal metal rod of claim 24, wherein each tunnel has a longitudinal axis, the longitudinal axis of each tunnel being substantially parallel to the longitudinal axis of an adjacent tunnel so that the tunnels are substantially parallel with respect to one another.

37. (previously presented) The longitudinal metal rod of claim 24, wherein each tunnel has a longitudinal axis, each tunnel is substantially orthogonal to an adjacent tunnel.

38. (previously presented) The longitudinal metal rod of claim 37, wherein each tunnel intersects at least one adjacent tunnel.

39. (New) A connection unit for use in a spinal fixation device comprising:

a first bone coupling assembly;

a second bone coupling assembly; and

a flexible rod including:

a first end received by and coupled to the first bone coupling assembly;

a second end received by and coupled to the second bone coupling assembly, the first and second bone coupling assemblies capable of securing the rod between a first vertebra and a second vertebra such that the flexible rod limits movement of the first vertebra relative to the second vertebra; and

a longitudinal substantially cylindrical center section having a longitudinal axis and an outer surface, the center section being located between and coupled to the first end and the second end, the center section including a plurality of grooves formed in the outer surface of the substantially cylindrical center section, the plurality of grooves extending circumferentially around the longitudinal axis and a plurality of holes formed in the substantially cylindrical center section, each hole intersecting an end of at least two of the plurality of grooves formed in the outer surface of the rod.